Caribbean Sea, and of the Gulf of Mexico have appeared in the Museum publications. He had begun to work at the magnificent collection of Halcyonarians made by the *Blake* in the Caribbean Sea, and had already made good progress with his final report on the Holothurians. The Crinoid memoirs published by him relate to a few new species of Comatula and to the interesting genera Rhizocrinus and Holopus.

The titles of his memoirs indicate the range of his learning and his untiring industry. His devotion to science was boundless. A model worker, so quiet that his enthusiasm was known only to those who watched his steadfast labour, he toiled on year after year without a thought of self, wholly engrossed in his search after truth. He never entered into a single scientific controversy, nor ever asserted or defended his claims to discoveries of his own which had escaped attention. But while modest to a fault and absolutely careless of his own position, he could rebuke in a peculiarly effective, though always courteous, manner ignorant pretensions or an assumption of infallibility.

Appointed keeper of the Museum of Comparative Zoology after the death of Prof. Agassiz, he devoted a large part of his time to the administration of the museum affairs. Always at his post, he passed from his original investigations to practical details, carrying out plans which he had himself helped to initiate for the growth of the institution. As he had been the devoted friend of Prof. Agassiz' father, he became to his son a wise and affectionate counsellor, without whose help in the last ten years the Museum could not have taken the place it now occupies.

If he did not live to see the realisation of his scientific hopes, he lived at least long enough to feel that their fulfilment is only a matter of time. He has followed Wyman and Agassiz, and like them has left his fairest monument in the work he has accomplished and the example he leaves to his successors.

Cambridge, Mass., August 2 ALEXANDER AGASSIZ

NOTES

THE honour of a Knight-Commandership of the Bath has been conferred upon Mr. E. J. Reed, C.B., F.R.S., late Chief Constructor of the Navy.

WE give this week, by the continued kindness of General Myer, the International Monthly Chart for October, 1878, showing mean pressure, temperature, force and prevailing direction of wind at 7.35 a.m. Washington mean time, for that month. The lessons which it teaches may be learned by comparison with the chart for the previous month; any remarks we may have to make upon it we reserve for the issue of the next chart.

WE are happy to state that the Worshipful Company of Drapers have intimated their intention of continuing, at all events for the present, their annual subscription of one hundred guineas to the Research Fund of the Chemical Society.

THE eighth session of the French Association for the Advancement of Science was opened on August 11 at Rheims, under the presidency of M. Krantz, senator and ex-director of the Universal Exhibition of 1878. In his opening speech M. Krantz paid a tribute to the memory of Paul Broca, and spoke of the late Universal Exhibition as well as the construction of the Trocadéro Palace. The General Secretary, M. Mercadier, according to the routine of the French Association, reviewed the work done last year at Montpellier. Addresses were also delivered by M. Diancourt, Mayor of Rheims, and M. Paulane, ex-Mayor, President of the Local Committee. The report read by M. Georges Masson, the treasurer, shows that the French Association is very prosperous, numbering 3,000 members, with a capital of 300,000 francs. The income is 60,000 francs. The attendance is considered to be very good, the local attractions being really unexceptionable in a city whose wines are famous in the whole world, and which is the centre of interesting excursions. On the 12th M. Perrier delivered, in the General Session, an address on the law of selection.

THE Cambridge meeting of the British Medical Association last week is considered to have been one of the most successful which the Association has held. The presidential address by Prof. Humphry traced the history of medical science in the English universities, and showed the causes of the gradual divorce between university and medical studies up to the last few years. He reiterated his advocacy of university residence for medical students, and of continual advance and expansion of good teaching and examining. He claimed that in no other branch of knowledge were true science and sound practice so perfectly conjoined; in no other was there so much that was calculated to give strength and balance to the thinking and the observing faculties; nor was there any in which mental and bodily effort were more required or more telling. What problems were harder of solution than those relating to the aberrations of the human organism? The very difficulty of the problems caused them to be overlooked. Clearer knowledge of physiology and pathology, of heredity, of the effects of social laws and climatic variations, would have a vast influence on the whole framework of civilisation; and thus he was led to conclude with Descartes that all great movements in the world of thought, of philosophy, or of morals, and of government, were to come out of medicine. Cambridge ought not to fail in doing its share in the great work, and renewed life would come to all its best interests from a wise encouragement of medicine. The British Medical Association brings together in one aim an enormous power, and ought to aid in wearing away false dogmas and false notions of conflicting interests. Dr. Humphry further urged on the vast mass of members of the Association a hearty participation in the collection of facts bearing on the effects of temperature, climate, soil, &c., on disease, under the guidance of a medical investigation committee. The latter proposal awakened a cordial response, and the Council were requested to see it carried out. The honorary degree of LL.D. was conferred on Doctors Brown-Séquard, Donders of Utrecht, Gross of Philadelphia, Sir W. Jenner, Sir W. Gull, Sir George Burrows, Prof. Haughton of Dublin, Mr. Wm. Bowman, Mr. Joseph Lister, Dr. Denis O'Connor of Cork (the retiring president of the British Medical Association), Mr. John Simon, C.B., and Dr. Andrew Wood. Dr. Chauveau of Lyons was unavoidably absent from the meeting, and consequently could not receive in person the degree which would otherwise have been conferred upon him; and Prof. Broca's lamented death caused another variation from the list as originally settled.

THE International Congress of Hygiene will meet at Turin on September 6 under the presidency of King Humbert, who will give the inaugural address. The general meeting will take place in the Carignan Palace. The Congress will end by an excursion to Milan, where a cremation will take place.

IN a brief report of the recent French scientific cruise in the *Travailleur*, in the Bay of Biscay, M. Alph. Milne-Edwards says the weather was very good, allowing them in the last fortnight of July to dredge twenty-four times, sometimes using two dredges at once. The bottom has a thick layer of greenish-grey ooze, which was apt to fill the dredges, so recourse was had largely to weighted rods with hemp or twig bundles, swabs, &c., attached, to sweep the bottom. Sir William Thomson's wire apparatus proved very serviceable in sounding. The greatest depth reached was 2,700 m., and the least exceeded 300 m. An important collection of marine organisms was obtained, including, besides most of the species described by English and Scandinavian naturalists, many new animals not previously known. Some large Gorgonians of the genus Isis, once brought up from 600 m., about midnight presented a curious sight: the whole of the sarcosoma between the zooids emitted a green phosphorescent light so strong that on agitating these animals they seemed to produce a shower of fire, and with the light emitted one could read the smallest type. The collections are distributed thus: M. Vaillant examines the fishes, nemertians, and sponges; M. Fischer, the molluscs; M. Marion, the annelids, echinoderms, and other zoophytes; M. de Folin, the foraminifera; M. A. Milne-Edwards, the crustacea; while M. Perier has made thermometric observations, and will analyse the samples of sea-bottom.

AMONG our letters this week are some referring to the recent remarkable displays of auroræ. Another correspondent writes that similar displays were seen from Caithness-shire on the evenings of Wednesday the 11th, and Thursday the 12th inst. The finer of the two displays was on the Thursday, lasting from about 10 p.m. to midnight. The outburst of streamers at 10.15 p.m. was very fine, the streamers appearing like wavy swaying curtains from the zenith to near the horizon, with a development of tints of the loveliest green near the zenith. The aurora of the 11th was to the north-west of Wick, but that of the 12th chiefly to the north-east. From Kirkwall also fine displays were seen on the 13th till past midnight. Reports in the daily papers also show that the phenomena have been seen from many parts of England as well as Scotland. Fine displays of this beautiful meteor may very confidently be looked for during the next three months, and if our spectroscopists bestir themselves a large extension of our knowledge of the aurora is close at hand.

PROF. SILVESTRI writes to the *Daily News* Naples correspondent that in a short time the Observatory on Etna will be an accomplished fact. The Italian Government contributes half of the expenses, the Province of Catania a fourth, and the Commune of Catania the remaining fourth. The object of the observatory is the study of vulcanology, and therefore it has been built at the base of the central cone, exactly on the former site of the well-known refuge called the "Casa degli Inglesi.' It will be in connection with several small sismic stations posted on the slopes of the mountain, and the whole will communicate telegraphically with another vulcanic station which he proposes to establish in Catania. In the central observatory, so favourably situated about 3,000 metres above the level of the sea on the isolated mountain, where the extent of view is unlimited, and the sky peculiarly transparent, meteorological observations most interesting to science will be carried on, and Prof. Tacchini, the astronomer, proposes to make there experiments in physical astronomy, particularly relating to the spectroscopical study of the fixed stars. The Observatory will therefore be divided into three scientific branches—vulcanology, astronomy, and meteorology, connected with the University of Catania, and dependent on the Minister of Public Instruction. It was intended that the inauguration should take place during the Congress of the Alpine Club at Catania, but unforeseen delays in the execution of the works will defer it to next year.

THE United States Government has taken prompt and vigorous action on the basis of the recent conclusions come to by scientific investigators as to the prevalence of colour-blindness. Both in the army and the navy, and in the case of pilots, systems of examination have been devised and are enforced to secure the detection of colour-blindness in all cases in which such a defect would be likely to lead to inefficient discharge of duty. As we formerly intimated, also, the State of Connecticut insists that all railway *employés* within its borders be tested for the same purpose, and doubtless in time a similar law will be passed in all the other States. The following are the rules for conducting the examinations in the State of Connecticut—Rule 1.—For the qualitative estimation of colour-blindness the following tests are to be employed: Holmgren's worsteds, the tables of Stilling, Donders' colour-test patterns, Pflüger's letters with tissue papers. Däae tests and Woinow's revolving cards may also be used. For the quantitative test for colour-blindness, Donders' reflected spots, Donders' method with transmitted light, Holmgren's shadow-tests shall be employed. Rule 2.—The following are the requirements for a certificate in the first class: 1. Healthy eyes and eyelids without habitual congestion or inflammation. 2. Unobstructed visual field. 3. Normal visual acuteness. 4. Freedom from colour-blindness. 5. Entire absence of cataract or other progresssive disease of the eyes. The second class shall have:—1. Healthy eyes and eyelids without habitual congestion or inflammation. 2. Unobstructed visual field. 3. Visual acuteness at least equal to three-fifths without glasses and normal with glasses in one eye, and at least one-half in the other eye with glasses. 4. Freedom from colour-blindness in one eye, colour-perception at least equal to three-fourths in the other eye. Rule 3.—In the case of *employés* who have held their positions five years or more, the standards required in each class shall be determined under special instructions from the Board of Health.

THE third instalment of Dr. Elliott Coues's "Ornithological Bibliography" is, we learn from the New York *Nation*, still in the press, having been delayed by its unexpected extent. Meantime, extracted from the *Proceedings* of the United States National Museum, we have the fourth instalment, being a "List of Faunal Publications relating to British Birds." Such a list, of course, could not possibly be made complete out of England, and the compiler himself points out its inadequacy. Nevertheless, it embraces something like a thousand titles, only in a comparatively few cases taken at second-hand, and is so accurate and punctilious as far as it goes that to call it a "published proof-sheet" is almost an excess of modesty. The titles are given in full, and even, as in the first two (different editions of the same book), with the typographic errors and inconsistencies of the originals. Further, they are arranged chronologically, and copiously annotated, not seldom with the aid of Prof. Alfred Newton, of Magdalene College, Cambridge.

"PALÆONTOLOGISTS and naturalists generally," the *Nation* states, "will learn with satisfaction of the appearance in connected form of the results of a portion of Prof. Marsh's wonderful palæontological discoveries in the Western Territories. The series of explorations so successfully carried on by this distinguished naturalist in the Rocky Mountain region since 1868, undertaken at no inconsiderable personal risk and no less considerable outlay of private capital, has resulted in the acquisition by Yale College of the most extensive collection of fossil vertebrate remains in the world. Huxley's visit to this country in 1876 was largely, if not mainly, brought about by his desire to examine personally this collection. Some notion of its extent may be gleaned from the fact that of Pterodactyls (flying reptiles) alone it embraces fragments belonging to at least 600 individuals, and of Mesozoic birds—a class of remains which, as far as number is concerned, has thus far yielded the most barren results in extra-American countries—fragments representing more than 100 individuals. The work before us, which is intended to form vol. vii. of the geological reports of the Fortieth Parallel Survey, deals with the *Odontornithes*, or extinct toothed birds of North America. These, belonging to the middle-cretaceous period, are the oldest ornithic remains as yet discovered on this continent, and, with the exception of the three specimens of the *Archæopteryx* unearthed from the Jurassic lithographic limestone of Solenhofen, Bavaria, represent the oldest known form of birds altogether, for the footprints in the Triassic sandstone of the Connecticut valley are now generally referred to Dinosaurian reptiles. Despite their strongly reptilian characters—among others, the presence of teeth in the beaks—which point to a position low down in the avian branch of the Sauropsida, Prof. Marsh argues, from the structural differences existing between such forms as *Hesperornis* and *Ichthyornis*, and between these and *Archæopteryx*, which appear greater than those presented by any two living birds, that they represent comparatively highly specialised types, and that we must look for the earliest appearance of birds in strata possibly as old as the Permian (Palæozoic). The magnificent engravings which accompany the work render it a *livre de luxe*, and place it in the category of recent American scientific works next to Leidy's 'Rhizopods,' to which we lately had occasion to call attention. We are informed that another important work on the extinct vertebrata of the West is shortly to appear, from the pen of Prof. Cope."

Mr. Thomas Bolton of Birmingham has sent us No. 3 of his "Portfolio of Drawings and Descriptions of Living Organisms (Animal and Vegetable) Illustrative of Freshwater and Marine Life," which have been sent out by him with the living specimens.

An interesting paper by Mr. G. M. Dawson on the distribution of some of the more important trees of British Columbia is reprinted from the *Canadian Naturalist*. In connection with this subject we learn from the *Gardener's Chronicle* that three of the most distinguished botanists of America—Dr. C. C. Parry, Dr. George Engelmann, and Prof. C. S. Sargent—are now on their way to Vancouver's Island; thence they propose to return and ascend the Columbia River as far as it is necessary to settle vexed tree questions in the extensive forest region along its shores; they will thence journey southward *viâ* Portland through the centre of Oregon to the great Fir forests of Shasta. We may hope that much "clearing-up" in the nomenclature of certain Conifers will accrue from the visit.

We have received the five Annual Reports of the Little Miami Natural History Society, which was founded in 1875 at Antioch College, Yellow Springs, Ohio. The objects of this Society are:—(1) To develop among the students a habit of accurate observation and patient investigation rather than mere acquisition in studying the natural sciences, and thus to accustom them to the methods and rules of scientific study; and (2) to work out the natural history of the district in which the college is situated, especially the valley of the Little Miami and its tributary streams. The membership of the Society is open to all students of the College who wish to join for the purpose of doing actual work in furtherance of this purpose. Each of the Reports covers only one side of a sheet of paper, but from the catalogue of papers and reports contributed to the Society, it is evidently doing good work in the natural history of its district.

Dr. R. F. Hutchinson of Mussoorie, N.W.P., India, writes with reference to Nature, vol. xxii. p. 119, that he has frequently seen Mercury with the naked eye out there, especially in the cold weather when the atmosphere is clear and dry. He has also twice seen two of Jupiter's satellites under the same circumstances.

Several important changes have been made in the method of conducting the technological examinations in connection with the City and Guilds of London Institute; those interested should apply for a programme of the changes to the Secretary, Gresham College, E.C.

Telephone experiments with a new apparatus by Dr. Herz have been made with the French Atlantic cable between Brest and Penzance, and are said to have yielded satisfactory results.

On Sunday, August 8, a young man named Brest ascended at Marseilles in a balloon he had constructed himself. He was lost to view in the direction of the sea, and his aërial craft was found by fishermen close to Bastia, in Corsica. It is feared that the unfortunate aëronaut was drowned.

The lady who took so high a place in the London University B.Sc. examination, referred to last week, was not Miss, but Mrs. Bryant, the well-known teacher at the North London Collegiate School for Girls.

The additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus erythræus*) from India, presented by Mr. J. E. Kincaid; a Black-handed Spider Monkey (*Ateles geoffroyi*) from South America, presented by Capt. Woolward; a Common Squirrel (*Sciurus vulgaris*), British, presented by Capt. Tholandir; a Spotted Ichneumon (*Herpestes auropunctatus*) from India, presented by the Hon. L. S. Jackson; four Richardson's Skuas (*Lestris crepidatus*), Shetland Isles, presented by Mr. Robt. T. C. Scott; three Abyssinian Guinea Fowls (*Numida ptilorhyncha*) from Abyssinia, presented by Mr. Gerald Waller; two Common Nightjars (*Caprimulgus europæus*), British, presented by Mr. E. Ockenden; a Common Chameleon (*Chamæleon vulgaris*) from North Africa, presented by Mr. Percy Howard; an Areolated Tortoise (*Homopus areolatus*), a Geometric Tortoise (*Testudo geometrica*) from South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; three Richardson's Skuas (*Lestris crepidatus*), Shetland Isles, four Glass Snakes (*Pseudopus pallasi*) from Dalmatia, deposited; a Yellow-collared Parrakeet (*Platycercus semitorquatus*) from West Australia, received in exchange.

OUR ASTRONOMICAL COLUMN

The August Meteors.—The meteors annually encountered by the earth on arriving at the descending node of the third comet of 1862, in the orbit of which they are found to travel, are reported to have been less numerous this month than in most recent years. The earth arrived in the longitude of the node about midnight on the 9th inst., and in this position is only 430,000 miles, or less than twice the moon's distance from the comet's track. Even if less frequent than in several past years, a considerable number was observed on August 9, 10, and 11, and on the latter night a conspicuous Aurora Borealis, which phenomenon has so often accompanied meteoric displays, was witnessed in the north of England. Early on the evening of August 12 the meteors were sufficiently frequent and bright to attract the attention of persons in the suburbs of London who were not looking for them, but there were very few later in the evening.

It has been frequently remarked that the August meteors, or, to call them by their astronomical designation, the *Perseids*, must be much more widely distributed along the cometary orbit than are those of the November period—the *Leonids*—moving in the track of the first comet of 1866. The comet which appears to generate the August meteors, or at any rate to be followed by them, has now receded beyond the orbit of Neptune, and will continue to recede until about the year 1923. It was last in aphelion, according to Prof. Oppölzer's investigation, about 1801 or 1802, and, notwithstanding the great distance of the comet, there was a remarkable meteoric display. Herrick reports a letter from Dr. Joseph Priestley describing the phenomenon as he witnessed it on August 8, 1801, amongst the meteors being "a prodigious number of fire-balls." He compared the whole to a brilliant display of fire-works.

It is rather singular that in the history of comets we should not have been able to recognise any previous appearance of the body connected with the *Perseids*, notwithstanding its close approach to the earth's orbit when the perihelion passage takes place in the summer. Perhaps for many past centuries the perihelion may have fallen in the winter, when the comet would have greater chance of escaping notice.

Cape Observations of Comet 1880 (I).—Mr. Gill sends us the fully reduced observations of the great comet of the present year made at the Royal Observatory, Cape of Good